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¶1. (SBU) Introduction: The purpose of this newsletter, initiated in January 2004, is to highlight minerals and energy developments in South Africa. This includes trade and investment as well as supply. South Africa hosts world-class deposits of gold, diamonds, platinum group metals, chromium, zinc, titanium, vanadium, iron, manganese, antimony, vermiculite, zircon, alumino-silicates, fluorspar and phosphate rock, and is a major exporter of steam coal. South Africa is also a leading producer and exporter of ferroalloys of chromium, vanadium, and manganese. The information contained in the newsletters is based on public sources and does not reflect the views of the United States Government. End introduction.

HOT NEWS

ASME Nuclear Codes and Standards

¶2. (SBU) Some 400 delegates from South Africa's potential nuclear supplier and service industries attended the ASME (American Society of Mechanical Engineers) Nuclear Codes and Standards workshop held in Johannesburg from October 7-9. The program included a technical tour to Columbus Stainless, Africa's only stainless steel plant (see below). ASME is a U.S.-based, independent organization that sets globally-recognized performance, testing, safety and numerous other standards and codes for engineering structures and components, including nuclear. The purpose of the workshop was to explain and promote ASME standards as a means for potential South African nuclear industry suppliers to join the global supply chain, thereby indirectly supporting Westinghouse's bid for new nuclear build in South Africa. The workshop covered most aspects of the requirements for certification of South Africa's developing Pebble Bed Modular Reactor power plant, and for components used in nuclear plants that may also be exported. The workshop was the joint initiative of ASME and the U.S. Commercial Service based in Johannesburg.

End of Commodity Super Cycle - Or Is It?

¶3. (SBU) South Africa is a major producer of both precious and industrial-use metals and minerals, which in raw and processed form account for some 17-18% of GDP and more than 50% of exports. The current global credit market turmoil and the collapse of demand and prices for commodities have had a major impact on producers, particularly those in emerging countries. The global commodity price index for 19 raw materials has fallen by 43% (equivalent to a loss of value of $281 billion at current production levels) since it peaked in July 2008. This is more than the total worth of the raw materials two years ago, according to the Reuters/Jefferies CRB commodity price index. South Africa's major commodity prices have fallen since July 2008 by: PGMs 67%, gold 26%, ferro-alloys 12%, copper 52%, nickel 80%, lead 67%, stainless steel 36%, uranium 78%, vanadium 28%, iron ore 10%, and aluminum 36%.
Q36%, uranium 78%, vanadium 28%, iron ore 10%, and aluminum 36%.
Coal, diamonds, zircon, manganese ore, and titanium have generally retained or increased their value. To add to South Africa's woes, the rand/dollar exchange rate and the Johannesburg Security Exchange (JSE) have both weakened by 40% since July/August, which raises the specter of further inflation and interest rate increases, above the respective current 13.0% and 15.5%. The good news is that crude oil has fallen in price by nearly 60% and the refined products by some 13% at the pumps.

PetroSA's 400,000 Barrels/Day Refinery

¶4. (SBU) South Africa's National oil company PetroSA announced on October 2 that it had received a manufacturing license for its planned $5 billion, 400,000-bbl/d crude oil refinery. The Mthombo refinery will be constructed in the Coega industrial development zone (IDZ), located east of Port Elizabeth in the Eastern Cape Province, and will probably include a new fuel products pipeline to

Johannesburg. PetroSA CEO and President Sipho Mkhize said the refinery would ease the country's current and projected fuel shortage and was of strategic importance to economic development. PetroSA previously announced its intention to dedicate the new refinery for Venezuelan heavy oil (hoping for equity participation from Venezuelan state oil company, PDVSA). Construction is expected to start in 2010 and the refinery is scheduled to come on stream in ¶2014. The refinery would be the biggest in Africa and would create about 25,000 direct and indirect jobs. Comment: This refinery would take the place of the Alcan-Rio Tinto aluminum refinery which would have been the anchor project for the IDZ and was placed on hold as a result of the January power crisis. The PetroSA refinery also provides additional energy resources to the energy-starved country, rather than consuming it. End Comment.

¶5. (SBU) Neither the SAG nor the SA Petroleum Industry Association (SAPIA) envisaged the need for more refining capacity prior to the start of South Africa's economic growth spurt in 2003. Economic growth has since outpaced fuel demand, refined fuel products have now to be imported, and pipeline and road infrastructure is under strain to move ever-greater volumes of refined products. State-owned Transnet Pipelines is building a new pipeline from Durban to Johannesburg and the private sector is planning one from Maputo in Mozambique to Secunda in Mpumalanga to relieve the transport problem. All of South Africa's refineries are old, are surrounded by residential suburbs, and increasingly have to implement costly retrofits to comply with new fuel quality and environmental standards. Some have become uncompetitive, and the private sector appears reluctant to build a new, state-of-the-art refinery. (Comment. Critics opine that output from this new refinery would far exceed South Africa's projected requirements and could make existing refineries obsolete. The SAG's response is that excess fuel will be exported to neighboring states. Other critics note that state control of refined product prices has led to the private sector's unwillingness to invest in additional refinery capacity and the current domestic refined product shortage in the same way that state control of electricity prices has led to the private sector's unwillingness to participate in public private partnerships to produce electric power and the current power

shortage. End Comment.)

State-owned Mining Company Contradiction

¶6. (SBU) Minerals and Energy Ministry spokesperson Sputnik Ratau said at South Africa's Mining Summit on September 29 that there was no plan "at the moment" to create a state-owned mining company. Such a state mining company was proposed by the National Union of Mineworkers (NUM). Ratau emphasized it was not government policy to establish and control mines. Nevertheless, Department of Minerals and Energy DDG Jacinto Rocha said at the Gordon Institute of QBusiness Science (GIBS) mining panel discussion on October 8 that the state intended to become involved in mining. He said a decision had been taken to re-activate a pre-existing state-owned mining company, but stressed there would be no wholesale nationalization of mines. Rocha said the alternatives for the state were direct involvement as a miner or indirect involvement as a shareholder, particularly in platinum sector opportunities. Besides platinum, the state would also consider opportunities in gold, uranium and other strategic minerals.

¶7. (SBU) Rocha pointed out that the state had long been involved in mineral ventures, including Alexkor diamonds and Foskor phosphate mining, and it had established the national oil company PetroSA out of other state-owned companies Soekor (petroleum and gas exploration) and Mossgas (gas-to-liquid conversion). The state had also established enterprises such as Iscor Steel (now MittalAcelor), Columbus Stainless, and Sasol (coal-to-liquids), all of which had since been privatized. He said the issue was not whether mining companies were state-owned or privately owned, but whether they had quality mining expertise and management. Rocha also referred to neighboring Botswana and Namibia, where 50/50 joint ventures had been established between the respective governments and De Beers in the form of Debswana and Namdeb.

ENERGY

Proposed Energy Conservation Scheme

¶8. (SBU) Eskom spokesperson Corrie Visagie announced that the state-owned power utility hoped to implement its energy conservation scheme (ECS) during the first quarter of 2009. The plan would set out how much power users could consume over a 12-month period and would levy considerably higher tariffs for consumption above this amount. Although not fully finalized, Eskom has indicated that the conservation rates would apply to customers using more than 100 MWh per year or a maximum demand greater than 25 MW. Each customer would be given an energy allocation based on the consumption during the period October 2006 to September 2007, or before load-shedding came into effect. The required savings for each customer class, envisaged to reduce overall demand by 3,000 MW, is 8% for agriculture; 10% for industry; 20% for the commercial sector; 20% for the residential sector; and 25% for government and State-owned enterprises.

¶9. (SBU) Visagie said Eskom would set rules to provide for changes that may have taken place after the base period. Major mining companies, which were already subject to a 5-10% cut, would be exempt from further cuts. Visagie said the benefit of the allocation was that the end-user would have the flexibility to use energy as he/she sees fit. He said normal tariffs would apply for the allotted energy used, but increased and punitive tariffs would apply in cases where the end-user exceeded the allotted amount. Visagie also warned that Eskom would be forced to revert to load-shedding if the energy conservation scheme is not implemented.

China's CTL Project with SASOL Progressing

¶10. (SBU) China's Shenua Ningxia Coal Industry Group and South African partner Sasol announced they had signed a contract on October 22 with Foster Wheeler International Corporation and Wuhuan Engineering Company to carry out a feasibility study for an 80,000 barrel per day coal to liquids (CTL) plant. The plant is to be located at the Ningdong Chemicals Base in the Ningxia Hui Autonomous Region of China. The Ningdong industrial region already has an extensive infrastructural and industrial base, including power and water supply, roads, rail, housing, and maintenance facilities. The plant site is adjacent to huge coal reserves. The decision to proceed with the feasibility study followed an announcement by the National Reform and Development Commission of China that the Ningxia/Sasol CTL project would continue, despite recent cut-backs on other proposed CTL plans. China is seeking ways to meet its increasing demand for environmentally friendly fuels and the CTL route is seen as a promising option.

Government Change Clouds Eskom Projects

¶11. (SBU) Recent changes at the Department of Public Enterprise (DPE), which runs state-owned power utility Eskom, may delay
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projects to expand electricity generation and mitigate the country's power shortage. New South African President Kgalema Motlanthe named former Department of Justice Minister Brigitte Mabandla as the new DPE Minister at the end of September. Analysts said Mabandla will have to get to grips with plans to build a number of new power stations and help Eskom raise cash internationally in the midst of a global credit squeeze. Her term will last six-eight months before the scheduled general elections, which leaves little time for meaningful changes and the possibility that she will be displaced after the April/May 2009 elections. One of Mabandla's key tasks will be to approve the expansions mooted for power generation, including the new nuclear power plants being contested by Westinghouse and Areva of France. The nuclear decision has been postponed on two occasions this year, but Eskom officials say that

the decision will still be made before year-end. Analysts do not expect Mabandla to radically change the current policy.

¶12. (SBU) Meanwhile, the electricity reserve margin remains alarmingly low as Eskom starts its summer maintenance program and Eskom's spokesman has affirmed that electricity supplies remain at risk. Energy savings were instituted following the January power crisis and there have been no significant power disruptions during and since the (southern hemisphere) winter months. Consumers have assumed a false sense of security because of this and the Department of Minerals and Energy has warned that South Africa is "not out of the woods yet," as far as electricity supply is concerned. Eskom has started its summer maintenance season and has shut down some units, so far without incident.

GOLD

Mars Bacteria Found in Deep Gold Mine

¶13. (SBU) A team of scientists has discovered a strange breed of bacteria living in a deep gold mine in South Africa. The rod-shaped microbe, dubbed Desulforudis audaxviator (see picture in e-mail version), can survive in complete darkness, without oxygen, in temperatures around 600C, as long as it has a trickle of water flowing through radioactive rocks. The bacteria derives energy from the radioactive decay of uranium in surrounding rocks and gets carbon and nitrogen, two of the building blocks of life, either from dissolved gases or by cannibalizing other bacteria. The bacteria was found living under such conditions in a 2.8 kilometer-deep gold mine in South Africa. These mines contain gold, uranium, fossilized

carbon material, and moisture. "I would guess that an organism like this would be ideally suited for the Martian subsurface," said Princeton University microbiologist Doctor Onstott, one of the microbe's discoverers. D. audaxviator takes its species name from the Jules Verne classic "Journey to the Center of the Earth". The research is significant as it shows the resilience of life on earth's most extreme frontiers, but also because of the implications for finding life elsewhere in the universe, said NASA's Astrobiology Institute Director Carl Pilcher.

STAINLESS STEEL

Stainless Steel and Nuclear Power in SA

¶14. (SBU) Stainless steel has unique properties that make it an important material in the construction of nuclear plants and structures in corrosive environments. Columbus Stainless Ltd is South Africa's and Africa's only stainless steel producer and is a fully integrated, high-tech facility. The facility is 76% owned by the Spanish stainless steel giant Acerinox S.A., which produces some 11% of the world's stainless steel output. Columbus hopes to provide its steel for a fleet of conventional pressurized water reactors (PWR) and up to 25 locally-developed Pebble Bed Modular Reactors (PBMR) mooted for South Africa over the next 25 years.
QReactors (PBMR) mooted for South Africa over the next 25 years.
Columbus also plans to export nuclear plant components, but will need ASME accreditation if selling to the U.S. market. Columbus has the capacity to produce 1 million tons per year of stainless steel, including 600,000 tons of value-added cold-rolled steel. At the time of the ASME-group visit, it was operating at 30-40% of capacity due to the drop-off in export orders, particularly from China and Asia, resulting from the current global financial turmoil. Columbus exports nearly 80% of its production and is looking to increase sales in the local and African markets.

MINING

Mining Industry Needs Skills

¶15. (SBU) South Africa is not alone in facing the skills shortage afflicting the global mining industry, which has been in growth mode since about 2002. The current global financial turmoil may slow or postpone some projects, but industry fundamentals still look good for the medium-term as China, India and Asia may be able to sustain their industrial growth. Growth requires mines and metals, but the lack of qualified, experienced engineers and miners is likely to be a major constraint to supply. The shortage of skills in the mining industry is so acute, according to a report by Ernst & Young (E&Y), that it is likely to persist even if 5%-10% of new projects are halted.

¶16. (SBU) The skills shortage is serious in all countries, according to the E&Y report, with Canada and Australia each estimated to need an additional 70,000 to 80,000 workers over the next decade. E&Y says the largest contributing factor to the labor shortage in South Africa is the HIV/AIDS epidemic, followed by the emigration of skills to developed countries. Estimates are that a third of South African engineering graduates have emigrated over the past 40 years. Shortages have pushed up salaries and forced mining CEOs to adopt innovative methods of recruiting, training, and retaining skills. Recruiters have to overcome the perception of mining as a "stone-age" career with issues of health and safety, working in remote areas, and mining as a sunset industry, instead of as a modern, technologically innovative sunrise industry. World leader in coal-to-liquid (CTL) technology Sasol recently announced that

they would provide an annual contribution of $3 million to South African academia to develop world-class science and engineering graduates, retain and attract talented academics to teach at universities, and grow the engineering profession. This investment is part of a $30 million ten-year commitment.

The Fittest to Survive in the Mining Sector

¶17. (SBU) The global financial turmoil could see the end for a number of junior miners, but also presents the majors with attractive buy-in opportunities to profit from the situation, according to the Chief Executive Officer of U.S. mining company Freeport McMoran. Analysts estimate some 50% of junior miners could be out of buiness in a year's time. The fittest companies will be well-placed to acquire properties at bargain prices and to profit as the commodity cycle turns and demand for minerals resurfaces, which is estimated to occur in mid-2009 (others say 2010/11). Currently, all mining share and mineral price indices have suffered, with some shares down by as much as 80%. At the same time, the combination of rising capital costs for new projects and mining input costs increasing by more than 20% per year is putting further stain on under-funded juniors.

Platinum Mining Takes the Hardest Knock
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¶18. (SBU) The platinum group metals (PGMs) basket price for platinum, palladium and rhodium is down by 55-68% (from $2,470 to $750 per ounce), or by some 40% in rand terms as the currency has weakened by 40% over the past few weeks. A Cadiz mining analysis said that new capital expenditure on PGM mines could only be justified if prices rise by 20% to 40% ($1,100-1,200 per ounce) above current levels. African Rainbow Minerals platinum division CEO Steve Mashalane said that 15 out of 27 PGM projects, mainly on the Eastern and Northern Bushveld Complex, are unlikely to go into production at current PGM prices.

¶19. (SBU) The collapse of PGM prices has placed many South African platinum mines in "survival mode", said a PGM analyst, and cuts to production and capital expenditure have become necessary. He said platinum production is largely unresponsive to price until it drops below a certain level, and thereafter it declines as lower-grade

sections are closed and expansions are curtailed. The analyst believes that once the platinum price drops below $1,100 per ounce (it was $790 per ounce on October 24) there is hardly any growth potential left above the current base production of 5 million ounces per year. However, deep, hard-rock mining is not as responsive to price changes in the short-term because of outstanding capital commitments and large labor forces that can not easily or desirably be retrenched every time metal price volatility results in low metal prices.

To Save Sterkfontein from Acid Mine Water

¶20. (SBU) Watermark Global has selected the CSIR's (Council for Scientific and Industrial Research) alkaline barium and calcium (ABC) process as the best technical and commercial solution for treating gold mine acid mine drainage (AMD) water. A pre-feasibility study on the viability of treating AMD water from the West Rand Witwatersrand Basin is currently being finalized. A five-month pilot-scale operation has shown that the CSIR technology meets the South African National Accreditation System standards for industrial quality and potable water. Phase one of the project would involve the construction of a commercial-size plant to treat 75 mega-liters of AMD water per day for industrial and/or domestic consumption. The project is aimed at reducing the toxicity of water flowing from defunct mines on the West Rand that threatens to flow into the Cradle of Mankind World Heritage Site, including the

Sterkfontein and other caves which host evolutionary human and humanoid fossils. The caves are composed of dolomite and could be severely damaged by acid waters.

DIAMONDS

State Diamond Trader Seeks New CEO

¶21. (SBU) The South African State Diamond Trader (SDT) CEO Abbey Chikane's contract has not been renewed and no replacement has yet been named. This follows the Trader's inability to supply sufficient stones to the local small diamond-cutting industry, which has seen the industry shed nearly 40% of its jobs over the past 18 months. An SDT spokesperson said the business of procuring rough diamonds was continuing as usual. The SDT was established to buy 10% of the country's diamond production for sale to local small cutters and polishers, in an attempt to boost local beneficiation and create jobs, but has fallen short of meeting these objectives. SDT management say they are awaiting approval from National Treasury to increase its borrowing power, from the current $4.5 million to $12.5 million per cycle, to enable it to purchase more rough stones. There is currently some uncertainty as to how the organisation will continue to operate.

LALIME